Ontario

Food Safety Practices in the Production of Unpasteurized Apple Cider

Cider Producer's Workbook

Ontario Ministry of Agriculture and Food
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Food Safety Practices in the Production of Unpasteurized Apple Cider

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INTRODUCTION

Food safety is everyone's business

The orchard-fresh flavour of Ontario's unpasteurized apple cider makes it a naturally appealing beverage, especially in autumn and through the holiday season. In 2000, approximately 2 million litres valued at $2.5 to $3 million were sold in the province.

More than ever, responsible producers want to ensure what they are selling is as safe and wholesome as possible. Food safety concerns have left few sectors of the agricultural industry untouched, and unpasteurized apple cider is no exception. With the blanket media coverage that foodborne illnesses receive, any problem – real or perceived – can hit an entire sector hard.

Everyone in the apple cider production chain, from picker to consumer, has a role to play in ensuring a safe product that continues to enjoy popularity. For you as a producer, this means implementing practices that give proper hygiene and sanitation procedures priority throughout the production process – without sacrificing quality, flavour, or the bottom line.

By making the practices and monitoring tools described in these pages a part of everyday operating procedures, you will greatly reduce the possibility of product contamination from ever happening. It should be noted, however, that the recommendations cannot *guarantee* safe and high quality cider – that's just not possible with a raw product. But they are the best methods known to prevent and combat contamination, promote quality, inspire consumer confidence, and sustain the long-term commercial viability of the sector.

Types and sources of contamination

Until the early 1980s, fresh, unpasteurized apple cider was considered to be a safe, non-hazardous product due to its relatively low pH. Recent studies have shown that microorganisms such as *Salmonella* sp. and *Escherichia coli* (*E. coli* O157:H7) can tolerate and survive in these acidic conditions. The past few years have seen several reported outbreaks of illness attributed to the consumption of unpasteurized apple cider.

Bacteria, viruses, or parasites can cause produce-associated illnesses. Bacteria such as *Salmonella, E. Coli 0157:H7, Shigella,* and *Bacillus cereus* are of significant concern. Parasites such as *Cryptosporidium* and *Cyclospora,*

and viruses such as hepatitis A and Norwalk, have also been the causative agents in several produce-associated illnesses – including those that involved unpasteurized apple cider. (See Appendix 1 on page 67 for a chart listing some pathogens, their related illness and associated foods. For some specifics on foodborne outbreaks, please refer to Table 1 in the Canadian Food Inspection Agency's *Code of Practice*.)

Microoganisms that can contaminate apple cider may come from:

- fresh fruit, especially if it is picked from the ground, or is decayed or damaged
- your facility, equipment, and water supply, and
- people involved in making cider.

By reviewing, evaluating, and strengthening current Good Agricultural Practices in the field and Good Manufacturing Practices in the processing facility, you can reduce microbial risks.

Reducing risk

The key to reducing risk is to prevent contamination before it happens. Research shows that it's very difficult to completely sanitize any produce once contamination has occurred. And to prevent contamination, you need to know what to look for.

Microbial contamination can occur during any part of the production process – from field operation to transport to market. Many sources of harmful microorganisms may be hidden or overlooked in your operation. Be alert for potential contamination from:

- irrigation and processing water
- manure and composted fertilizers
- animal feces
- dropped or decayed fruit
- unclean containers and equipment
- inadequate worker hygiene, and
- nearby livestock operations.

While disease-causing pathogens can live on the surface of the apples, they may also enter the fruit and survive in the core.

Follow safe cider producing guidelines that maintain clean and sanitary conditions, ensure worker hygiene, and reduce opportunities for

contamination of apples by contact with the ground, pests or animals. *Do not use dropped fruit for unpasteurized apple cider.*

Regular maintenance of the processing equipment is important. Keep washing and processing areas clean: wash and sanitize floors, walls, lines, belts and all equipment each day. Pay special attention to surfaces that come in direct contact with fruit. Prevent animals, birds or pests from entering the processing area. Use screening as necessary.

A Cider Producer's Workbook can help you systematize your operation to ensure you're doing everything possible to prevent contamination.

How to use this Workbook

Each chapter contains a list of Key Points. Key Points alert you to areas in your production process that may need immediate and concerted attention. Following the Key Points are descriptions of good agricultural or manufacturing processes to address the concerns.

Examples of completed forms appear in many chapters. They are there as aids to help you track and monitor your operation. The envelope that accompanies this *Workbook* contains blank copies of these forms that may be duplicated as is, or customized according to your individual needs.

If you are familiar with The Canadian Food Inspection Agency's *Code of Practice* you might also notice that the chapters in this book match the sequence of topics in the Code of Practice. The numbers in brackets ( ) in the chapter titles refer to those sections in the *Code of Practice* for your reference.

PRIMARY PRODUCTION (4)

Orchard Management (4.1)

Key Points

i. **Minimize the access of animals and birds to the orchard.**

ii. **Avoid using manure or human waste as fertilizer.**

iii. **Use water of acceptable microbiological quality (preferably potable water) for irrigation and dilution of agricultural chemicals.**

iv. **Use approved pesticides and fertilizers according to label directions.**

v. **Keep records of chemicals used, concentrations, methods of applications and dates. (See Form 1 on page 9.)**

i. Fecal matter is the major source of apple contamination in the orchard. It is a source of pathogens that can lead to illness in humans. Therefore it is very important to minimize the amount of fecal matter in your orchard at all times. Fecal contamination of the orchard can come from dogs and cats, livestock, deer, birds, rodents and even insects. Keeping animals out of an orchard significantly reduces the risk of contamination.

Discouraging birds from nesting can prevent birds from eating the fruit and orchard floor. Techniques for protecting your orchard from deer and rodents can be found at:
http://www.gov.on.ca/OMAF/english/crops/facts/98-123.htm

If you have any questions about this topic, please contact:
The OMAF Agriculture Information Centre
1-877-424-1300

[illegible]

Form 6: RECORDS OF FERTILIZER AND PESTICIDE APPLICATIONS

BLOCK/ CROP	DATE	PRODUCT USED	RATE/ UNIT	REASON / OBSERVED
Maize	2/3/07	Ammonia	1.5 kg/acre	Dry Rot

Harvesting Practices (4.2)

Key Points

i. **Never use dropped apples for unpasteurized cider.**

ii. **Use only quality apples. Reject apples with signs of damage, bruising or disease.**

iii. **Bins for transporting apples should be clean and in good condition.**

iv. **Employees should be trained in picking and handling practices to reduce damage and contamination of apples.**

v. **Adequate, equipped, accessible washrooms must be provided for employees.**

During harvest, apples can become contaminated by one or more of many sources. You must identify these sources in your operation, and do your best to prevent them from contaminating your crop.

i. Apples that have touched the orchard floor ("grounders") should NOT be used in unpasteurized cider production. Discard them! This includes apples have fallen to the ground or apples that are attached to lower branches are in contact with ground. The orchard floor can be a source of numerous pathogens – both from the soil as well as fecal matter. Even if livestock are not permitted in the orchard, it is difficult to guarantee that all wildlife has been excluded. Pathogens are much too small to be seen, so even if apples look clean, they can still be carrying pathogens.

ii. Damaged and rotten apples should not be used in cider production. Patulin, a harmful toxin produced by fungi found in rotting apples, can contaminate the cider if damaged apples are used. Also, bruising and sites of damage provide an environment suitable to the growth of microorganisms as well as a point of entry into the flesh where wash-water cannot reach them.

iii. The bins and containers used to harvest and transport apples can also be a source of contamination. All harvesting containers should be washed and sanitized before use. See section 5.1, "Transportation Practices", for more information. Do not allow workers to stand in the bins during harvest: their boots might contaminate the bin. When bins are full, don't stack them on top of each other, because the bottom of one container might contaminate the apples in another. Bins should also be covered and constructed to prevent access by rodents.

iv. Since apples are hand-picked, workers have a lot of contact with the apples during harvest. That is why it is extremely important to educate workers on proper picking and handling of apples, as well as on personal hygiene. See page 21, "Employee Behaviour and Hygiene", for more details. Train your workers to pick apples carefully to reduce damage, placing them gently into the bag. Also, ladder rungs can pick up contamination from boots. Therefore, only the side rails should be used for hand holds. The person in charge should be aware of signs of infectious disease and exclude any ill workers from the operation.

v. Employees should be provided with an accessible washroom with appropriate supplies, see the "Personnel" section, starting on page 40.

NOTES:

INTERMEDIATE OPERATIONS (5)

TRANSPORTATION PRACTICES (5.1)

Key Points

I. **Use bins made from cleanable materials.**

II. **Always clean and sanitize bins before and after use.**

III. **Move loaded bins to covered storage as soon as possible after harvest.**

Iv. **Store empty bins in a clean area, free from pests.**

v. **Clean and sanitize transportation vehicles before moving apple bins to storage or the processing area.**

i. Harvest bins and any other containers used to transport or store apples should be made of proper food-grade material. See Appendix 2 on page 68 for information on appropriate materials. Food-grade material is easier to clean, will not retain cleaning agents, and will not leach chemicals onto the apples. Wood is more difficult to clean and may retain cleaning agents.

ii. Bins should be cleaned and sanitized after each load is delivered and before reuse. See Appendix 2 on page 68 for information on approved cleaners and sanitizers. Muddy bins should be cleaned before entering the storage or processing area.

iii. Once bins are loaded with apples, they should be moved to a covered storage area as soon as possible. Do not let the harvested apples sit in the orchard where they are exposed to pests, environmental contaminants and fluctuating temperatures.

iv. When bins are not in use, they should be stored in a clean area where pests such as rodents, birds and insects do not have access to them. If

bins are stored outside, they can become a nesting place for rodents and insects, and the risk of fecal contamination of apples is increased. Bins should always be cleaned when removed from storage and before being used.

v. Transportation vehicles must be cleaned and sanitized before being used to transport apples. For information on proper cleaners and sanitizers, see Appendix 2 on page 68. Vehicles should also be cleaned and sanitized between shipments to prevent spreading contamination to subsequent loads. Do not use vehicles that have been used to haul manure, compost or animals. Do not let apples sit in unrefrigerated trucks for long periods of time.

FRUIT STORAGE PRACTICES (5.2)

Key Points

I. **Clean and sanitize storage facilities before harvest.**

II. **Prevent the entrance of pests and rodents to storage facilities.**

III. **Keep storage temperature at approximately 1°C – 4°C.**

iv. **Keep a Refrigerated Storage Temperature Log – Form 2, page 15.**

i. Contamination in the storage area can be passed to apples by contact with dirty walls and floors. It can also be passed from the ceiling through condensation dripping onto apples. To prepare apple storage facilities for harvest, all clutter and debris should be removed and the entire storage area – floors, walls and ceiling – should be thoroughly cleaned and sanitized. (For information on approved cleaners and sanitizers, see Appendix 2 on page 68.) In addition to removing contaminants, this will eliminate any material that might attract pests. Apples should also be covered so that any subsequent condensation does not come into contact with the fruit.

ii. Keep storage facilities closed and sealed to prevent access by pests, which can contaminate the apples.

iii. Apples should be pressed as soon after harvest as possible to prevent the growth of any pathogens. If this is not possible, apples should be rapidly cooled to temperatures between 1°C and 4°C.

iv. It is important for both the safety and quality of apples to keep them at the recommended temperatures. To ensure proper cold storage temperatures are maintained, keep a log in which the temperature of your storage area(s) is recorded at a set time interval. This way, if a malfunction occurs with the cooling equipment, it will be noticed and

repaired before the apples' condition is compromised. See Form 2 on page 15.

Form 2: REFRIGERATED STORAGE TEMPERATURE LOG

DATE	TIME	ROOM A	ROOM B	ROOM C	BULK COOLER	RETAIL COOLER	CHECKED BY
Sept 7	7 am	3°C	NA	NA	4°C	3°C	AH

Fruit Sorting (5.3)

Key Points

I. Use only food-grade surfaces to inspect apples.

II. Inspect apples before they enter the flume or wash-water.

III. Remove decayed, damaged, wormy and soiled apples.

Iv. Dispose of culled apples promptly.

i. Surfaces that come into contact with apples should be of an approved food-grade material. If existing surfaces are not food-grade material, it is possible to apply food-grade coatings to resolve this problem, rather than replacing equipment. (For information on approved food-contact material, please see Appendix 2 on page 68.) These materials are easily cleaned and will not leach chemicals onto the apples.

ii. Apples should be inspected in a clean, dry and well-lit area by workers who are properly trained in inspection and personal hygiene. (Please see "Employee Behaviour and Hygiene" on page 21.) Inspection should take place *before* apples are placed into the flume or wash-water, because once a dirty or rotten apple is placed in the water, it could potentially contaminate the whole batch.

iii. All rotting, damaged, wormy and dirty apples should be removed from the processing line.

iv. Once damaged and rotten apples are removed from further processing, dispose of them properly and promptly. That way, good apples will not be contaminated by them, and pests will not be attracted to the processing area. At a minimum, culled apples should be placed in a container and removed from the pressing area at the end of each pressing day.

Fruit and Equipment Cleaning (5.4)

Key Points

i. **Use potable water only.**

ii. **Use appropriate washing and sanitizing procedures – see page 19.**

iii. **Keep a Fruit Sanitizer Log – see Form 3 on page 20.**

iv. **Change water in dump tank.**

v. **Monitor wash water pH.**

vi. **Follow with a potable water rinse.**

vii. **Processing water should be at least 5°C warmer than your apples.**

i. Potable water is water that is clean and safe to drink. Potable water should be used in all apple production and cider pressing procedures. For more information on water supply, see page 37.

ii. Another way to reduce the risk of pathogens contaminating apple from the processing water is to add a sanitizer to the apple wash water. Sanitizing agents are able to kill many harmful pathogens and is effective in of pathogens in the wash water. However, this is not a guarantee that your water will be pathogen free.

Chlorine-based sanitizers are the most commonly used sanitizing agents in food processing operations. They must be approved by the Canadian Food Inspection Agency – see Appendix 2 on page 68. Follow the manufacturer's directions for use, as well as any instructions on protective clothing, ventilation, rinsing, storage, etc. The solution should be 50 - 100 parts per million (ppm) of chlorine for washing apples and 100 - 200 ppm for washing equipment. The instructions on page 19 explain how to calculate and prepare a sanitizing solution

using a chlorine based sanitizer for your apple wash water and your equipment wash.

The level of chlorine in your water can be monitored using a test kit. Check your telephone book's Yellow Pages under "Janitor's Supplies" or with your local farm supplies or feed dealers. Or inquire at a swimming pool supply store. Before you purchase a test kit, ensure that it can accurately test for chlorine levels up to 200 ppm (parts per million). Test kits can consist of test strips or tablets and containers and they may test for "total chlorine" or "free chlorine". It isn't important to understand these terms but you should make sure that you know which of these your kit tests for and accordingly maintain a level of:

- 50-100 ppm of total chlorine or
- 25-50 ppm of free chlorine.

iii. Keep a log of the type of sanitizers used, as well as the amount added and resulting concentration. See Form 3 on page 26.

iv. Apple wash water can quickly become laden with soil and plant debris. This debris can inactivate the chlorine in the sanitizer. To maintain the effectiveness of the chlorine wash, the water in the tank should be changed when it gets dirty.

v. As more chlorine based sanitizer is added to the water, the pH will rise (i.e., become less acidic). Chlorine is more effective at lower pHs – try to keep the pH between 6 and 7. So if a pH is too high, stop adding sanitizer until the pH drops. The water's pH can be monitored with pH test strips.

vi. Follow the sanitizing of your apples with a potable water rinse to remove any residual sanitizer from the apples – unless the manufacturer's instructions indicate otherwise.

vii. If apples are added to water that is colder than they are, a vacuum-like action is created that can cause pathogens on the surface of the apples to be drawn into the apple core. This should be avoided by ensuring that any water in contact with apples is at least 5°C (41°F) warmer than the apples.

Preparation Of Apple And Equipment Sanitizing Solutions from Chlorine Based Sanitizers.

What concentration of chlorine do you want in your water?

50 ppm = Apple Wash
100 ppm = Apple Wash or Equipment Wash
200 ppm = Equipment Wash

_____ (A)

How many litres of water is the sanitizer being added to (i.e. how many litres of dilute sanitizer do you want to prepare)? (e.g., 5000 litres)

_____ (B)

On the label of the sanitizer bottle, what percentage of hypochlorite is listed (e.g., 6%, 5.25% etc.)?

_____ (C)

To calculate the amount of sanitizer to add to your water, use your answers to the above questions to fill in the following formula:

LITRES OF BLEACH TO ADD = (A) ÷ (B) = _____ LITRES
(C) ÷ 10 000

= (DESIRED PPM OF CHLORINE) ÷ (TOTAL WATER VOLUME)
(% HYPOCHLORITE IN SANITIZER) ÷ (10 000)

Example:

You want 50 ppm chlorine. You are adding it to 500 litres of water. Your sanitizer is 6% sodium hypochlorite.

= (50) ÷ (500) = 25000
(6) ÷ (10 000) 60000

= 0.42 litres → So you add 0.42 litres of sanitizer to your water.

Common Conversions		
0.1 litres = ½ cup	0.5 litres = 2 cups	0.8 litres = 3 ½ cups
0.2 litres = ¾ cup	0.6 litres = 2 ½ cups	0.9 litres = 3 ½ cups
0.3 litres = 1 ¼ cups	0.7 litres = 3 cups	1.0 litres = 4

Form 3: FRUIT SANITIZER LOG

Type of sanitizer used: _____ "Sodium Hypochlorite"

Concentration: _____ 50 ppm

DATE	TIME	AMOUNT ADDED	CONCENTRATION	APPLIED TEMPERATURE	WATER TEMPERATURE	CHECKED BY
Sept 9	9 am	10 gal	50 ppm	9°C	10°C	MK

PROCESSING FACILITIES AND OPERATIONS (5)

Key Points

1. **Ensure good employee hygiene and behaviour, provide proper washroom facilities, and exclude ill workers from the processing operation.**
2. **Adopt good practices to ensure facilities and equipment are clean and properly sanitised before, during and after the processing operations. Record these procedures – see Forms 9.6, starting on page 58, for various checklists.**

In any processing facility, there are many potential sources of contamination that can lead to unsafe food products. In this section the areas dealt with are employee behaviour and hygiene and proper sanitation of equipment. The 5 areas to address each of these are:

1. Employee Behaviour and Hygiene

Employee behaviour can have a huge impact on food safety. All employees should be aware of behaviours and actions that can negatively influence the safety of the product. See Employee Rules of Hygiene on page 58 for a list of rules regarding hygiene that should be taught and enforced in the processing areas. The key to ensure the safety of food products is proper hygiene practices.

Employers, as well as employees, should also be aware of the signs of infectious illnesses. Anyone displaying these symptoms should not have contact with food, equipment or packaging material – see Flowchart on page 44.

Employee hygiene is also very important. Adequate washroom facilities must be provided to workers at all times. Proper hand washing practices are imperative to prevent the spread of foodborne illness. All workers coming into contact with food, equipment or packaging materials

should be aware of proper hand-washing procedures. These are listed on page 27. Not only should employees know how to wash their hands, they should know when to wash them.

Hands should be washed:

- when reporting to work
- after a break
- after smoking, eating or drinking
- after using the bathroom
- after coughing or sneezing
- after blowing or touching the nose
- after touching the mouth, eyes, ears or hair
- after touching anything other than the product or product contact areas.

ii. Premises and Equipment (6.1 & 6.2)

Cider pressing should take place in an enclosed area. This will exclude birds and animals from contact with the apples and equipment. Windows should be screened to prevent insects from entering.

The cider pressing facility and the equipment used should be maintained in good working order and should be properly cleaned and sanitized. For information on approved equipment cleaners and sanitizers, see Appendix 2 on page 68.

The following section outlines procedures for properly cleaning and sanitizing cider pressing equipment. It covers a) Pre-Operations Cleaning and Setup, b) Daily Operations/Routine Cleaning and c) Post Operations Cleanup. The accompanying forms on pages 28-33, allow workers to document their actions. Please note: there is a huge variety of cider pressing equipment and facilities in Ontario. This list is meant to be used as a guide for you to create a customized cleaning and sanitation program that suits your operation.

a) Pre-Operation Cleaning and Setup

The following procedures should be undertaken prior to start-up at the beginning of each production day. Keep a record of your activities using Form 4, page 28.

1. Inspect the mill and equipment for cleanliness and presence of foreign objects, and to ensure that all surfaces are visibly clean.

2. Sanitize and rinse all food contact surfaces, using an approved equipment sanitizer and potable water (Appendix 2, page 68).

3. Reassemble and check equipment for proper orientation.

4. Ensure employees document their pre-operation cleaning and setup activities as per Form 4, page 28.

b) Daily Operations and Routine Cleaning

Make the following steps a part of daily operations and routine cleaning procedures in order to maintain an orderly and sanitary process. Keep a record of the activities using Form 5 on page 29.

1. Sweep and clean the processing area and tank room as needed to keep them free of apples, leaves and rubbish.

2. Inspect apples on a clean, dry surface before they enter flume or wash-water. Rotten, damaged and wormy apples should be removed and discarded.

3. Keep trash receptacles covered and dumped as necessary to avoid attracting rodents or insects. At a minimum, trash should be emptied at the end of each pressing day.

4. Remove pomace from the processing area as soon as possible to prevent attraction of pests.

5. Keep cider press cloths on racks between uses and ensure that they do not touch the floor or other contaminated surfaces.

6. Sanitize jug filling pump and lines prior to use. For approved sanitizers see Appendix 2 on page 68.

7. Store empty cider jugs and caps off the floor and in their original containers until you are ready to use them. Ensure employees responsible for filling jugs practise proper hygiene.

8. Ensure any water into which apples will be placed is at least 5°C (41°F) warmer than the apples.

9. Clean and sanitize all emptied tanks used for holding and storage of bulk cider. Use appropriate solutions (information on page 68).

c) Post-Operations Cleanup

The following procedures should be followed at the end of each pressing day and after each batch of custom pressing. This ensures that potential contamination from one batch of apples is not spread to each subsequent batch of apples pressed that day. Keep a record of activities performed on Forms 6 to 9 on pages 30 to 33.

1. Remove all apples and debris from the processing area and equipment.
2. Disconnect power to the equipment and, if necessary, protect electrical connections and sensitive parts of the equipment from water.
3. Disassemble equipment where possible to provide better access and more effective cleaning.
4. Rinse or wash down all equipment and processing surfaces with warm water to remove remaining solid material. Water temperature should be 50 to 55°C (122°F to 131°F) for optimal cleaning.
5. Apply a warm detergent solution and scrub as necessary to remove any remaining solid material. See Appendix 2 on page 68 for information on approved cleaning solutions.
6. Rinse away detergent and loosened solids and soil with warm water 55-60°C (131°F to 140°F).
7. Inspect all surfaces and equipment for effectiveness of cleaning and if necessary repeat steps 4 to 6.
8. Apply an approved chemical sanitizer to all product contact surfaces (see page 68).
9. Follow manufacturer's directions regarding rinsing of equipment after sanitation. A water rinse may or may not be required.
10. Allow equipment to dry, and reassemble where necessary.
11. Press cloths should be washed, dipped in sanitizing solution and rinsed at the end of each day and then dried by hanging on a clean line in a well ventilated screened area free of pests.

NOTES:

EMPLOYEE RULES OF HYGIENE

The rules below should be followed by all employees working in the orchard and/or processing facility:

1. **Eating, drinking, and personal grooming are prohibited in apple cider processing areas. Use designated areas for lunch and other breaks.**

2. **A proper hair restraint (cap or hairnet, beardnet) must be worn when working with or handling cider apples, pomace, unbottled cider, and packaging materials.**

3. **Smoking and other uses of tobacco in processing areas are prohibited.**

4. **Clean clothing is to be worn at the start of each processing day. Clothing should be changed as often as necessary to maintain cleanliness. Soiled garments are unacceptable in the cider processing area. Sanitary work garments should be provided as necessary.**

5. **Rubber boots and other footwear worn in the processing area must be kept clean. DO NOT wear field clothes, especially shoes or boots, into the apple cider processing area.**

6. **No jewellery or wrist watches may be worn in the pressing area.**

7. **Employees with diarrhea, boils, open sores, cuts, burns or skin infections shall not be allowed to process cider, handle raw fruit or handle packing materials.**

THE SIX STEPS OF PROPER HAND WASHING

1. Wet

Wet hands first

2. Soap

Use soap, preferably anti-bacterial.

3. Soap/Lather

Lather well beyond wrist.

4. Wash

Work all surfaces thoroughly including wrists, palms, back of hands, fingers, and under fingernails - Rub hands together for at least 15-20 seconds.

5. Rinse

Thoroughly rinse with clean water. Be sure not to touch side of sink.

6. Dry

Dry hands completely with a single use towel. Use towel to turn off water and protect hands from resoiling.

Form 4: PRE-OPERATIONS CLEANING AND SETUP CHECKLIST

Today's date: Sept 8/02

Last day of production: Sept 1/02

Employees responsible: D. Woods

		YES	NO	INITIALS
1	Equipment and press cloths visually clean		✔	DW
2	Equipment requires re-cleaning and/or sanitizing	✔		DW
3	Re-cleaning and/or sanitizing performed	✔		DW
4	Reassemble equipment	✔		DW
5	Sanitizer applied: 150 ppm	✔		DW

Corrective actions:

- Pomace on conveyor, removed and sanitized

Supervisor signature: A. Hill

Form 5: DAILY OPERATIONS / ROUTINE CLEANING

Today's date: Sept 8/02

Employees responsible: A. Smith

J. Hill

		YES	NO	INITIALS
1	Apples visually inspected	✔		AS
2	Processing room / bulk tank room picked up/swept	✔		AS
3	Trash receptacles dumped, cleaned, sanitized	✔		AS
4	Cider cloths off floors on holding racks	✔		AS
5	Packaging materials off the floor	✔		AS
6	Pomace removal after each press	✔		AS

Corrective actions:

Supervisor signature: A. Hill

Form 6: POST-OPERATIONS CLEANING / SANITIZING – GRINDER APPARATUS

Today's date: Sept 8/02

Employees responsible: D. Woods

A. Hill

		YES	NO	INITIALS
1	Surrounding area free from debris		✔	DW
2	Rinse top, inside, outside of grinder apparatus	✔		DW
3	Remove by hand any remaining debris	✔		DW
4	Scrub with cleaner and food-grade brushes top, inside, outside of grinder apparatus	✔		AH
5	Rinse inside / top / outside	✔		AH
6	Visually inspect: a) free from organic matter b) water clear	✔		DW
7	Sanitizer solution concentration (ppm)	100 ppm		DW
8	Spray sanitizer on equipment, allow to drip off	✔		DW

Corrective actions:

- leaf and apple debris on floor, removed and area cleaned

Supervisor signature: A. Hill

Form 7: POST-OPERATIONS CLEANING/ SANITIZING – RACK AND PRESS

Today's date: Sept 8/02

Employees responsible: S. Hill

A. Hill

		YES	NO	INITIALS
1	Surrounding area free from debris	✔		SH
2	Equipment rinsed down	✔		AH
3	Equipment scrubbed inside/outside	✔		AH
4	Equipment rinsed down	✔		AH
5	Visually inspect – if food particles or debris remain, repeat #3 above	✔		SH
6	Sanitizer concentration	100ppm		SH
7	Flood equipment with sanitizer	✔		AH
8	Rinse equipment with water	✔		AH
9	Press cloths washed, rinsed, sanitized and dried	✔		SH

Corrective actions:

Supervisor signature: A. Hill

Form 8: POST-OPERATIONS CLEANING/ SANITIZING – WET BRUSHER

Today's date: Sept 8/02

Employees responsible: D. Woods

		YES	NO	INITIALS
1	Surrounding area free from debris		✔	DW
2	Rinse top, inside, outside of wet brusher	✔		DW
3	Remove by hand any remaining debris	✔		DW
4	Scrub with cleaner and food-grade brushes top, inside, outside of wet brusher	✔		DW
5	Rinse inside / top / outside	✔		DW
6	Visually inspect: a) free from organic matter b) water clear	✔		DW
7	Sanitizer solution concentration (ppm)	100ppm		DW
8	Spray sanitizer on equipment, allow to drip off	✔		DW

Corrective actions:

- leaves on brusher, removed and sanitized

Supervisor signature: A. Hill

Form 9: POST-OPERATIONS CLEANING / SANITIZING – FILLER

Today's date: Sept 8/02

Employees responsible: D. Woods

		YES	NO	INITIALS
1	Surrounding area free from debris	✓		DW
2	Cover motors / electrical panels	✓		DW
3	Rinse down equipment	✓		DW
4	Dismantle filler	✓		DW
5	Scrub inside / outside of filler with cleaner	✓		DW
6	Rinse filler	✓		DW
7	Visually inspect	✓		DW
8	Sanitizer concentration (PPM)	100ppm		DW
9	Sanitizer applied, allowed to drip off food contact surfaces	✓		DW
10	(Hand sink sanitizer concentration (ppm)	100ppm		DW
11	Parts washed, rinsed, sanitized, air dried	✓		DW

Corrective actions:

Supervisor signature: A. Hill

Pest Control

Key Points

i. **Keep grounds around the processing areas free from debris and clutter, and remove all possible food sources for pests.**

ii. **Use pest control methods and keep a Pest and Rodent Control Log – see Form 13 on page 38.**

iii. **Monitor bait station effectiveness and maintain the bait supply.**

Pests are potential sources of contamination in processing areas. They can harbour a variety of pathogens, which they can spread to people and equipment. Common pests of processing facilities include rodents and insects.

The key actions for controlling both groups of pests are excluding entrance and proper sanitation. Particularly for rodents, it is critical to keep the outside of the facility clean and not to have discarded fruit lying around.

i. The following measures, along with proper facility sanitation (page 31), should be established in and around the processing facility in order to minimize pest problems:

   - Around the farm in general, keep grounds clean, well-trimmed and uncluttered to avoid attracting pests.
   - Keep processing and storage areas uncluttered and clean to eliminate nesting areas for pests.
   - Keep processing areas sealed to prevent pest access. Screen windows and doors and minimize space below and above doors.
   - Remove all culled fruit and compost from the processing area and from grounds as soon as possible to prevent attracting pests.

[illegible]

Form 10: PEST AND RODENT CONTROL LOG

DATE	STATION		STATUS	ACTION (details)	CHECKED BY
	#	TYPE			
Sept 2/02	1	Trap	Full	Emptied Trap (1 mouse)	DW
Sept 2/02	2	Fly Paper	Full	Replaced paper, discovered mice	DW
Sept 8/02	1	Trap	Full	Emptied Trap (1 rat)	DW
Sept 8/02	2	Fly Paper	Clear	NA	DW

Water Supply (6.3)

Key Points

i. **Use municipal or potable water for washing and processing apples.**

ii. **Keep wells in good working condition and test water frequently.**

iii. **Avoid using untreated surface water in unpasteurized apple cider operations.**

iv. **Keep a Water Testing Record – see Form 11 on page 39.**

In your orchard, water comes into direct contact with fruit during irrigation, foliar application of fertilizer, pesticides and growth regulators, and overhead cooling. Water can carry many different types of harmful organisms that may contaminate apples. Even in small amounts, these microorganisms can cause foodborne illness. Pathogens can survive both on the surface of apples and within the core if absorbed.

Take care to ensure that potable water is used in all operations.

i. Potable (safe/clean) water must be used during processing. If the water source in use is a municipal supply, it is likely to be potable. However, this is not a guarantee that your water will be safe. Water should still be tested regularly for microbial contamination during the pressing season.

ii. If your water comes from a well, the safety of the water is in your hands. Ensure that the water does not contain pathogens. This means proper maintenance and having the water tested as recommended by the Ministry of Health and Long Term Care. Appendix 3 on page 69 provides some tips for well maintenance and prevention of contamination. Appendix 4 on page 70 explains how to properly sample and test your well water. Your local public health unit is another resource for

information on water sampling and testing. If well water test results are not acceptable, your public health unit will provide instructions on how to disinfect the well. To contact your local public health unit call 1-800-268-1154 or visit the following website: http://www.gov.on.ca/health/english/contact/phu/phuloc_dt.html#central%20east

iii. Surface water is a major source of irrigation in orchards. Be aware that there may be a significant risk of contamination when surface water comes in direct contact with fruit. If possible, avoid the use of untreated surface water in the orchard and do not use it in the processing operation.

To reduce the risk, limit water contact with fruit by using under-tree irrigation, and use potable or treated water for any foliar applications of materials that will contact fruit. Try to maximize the time between the last overhead irrigation and harvest. Since surface water quality is so variable, the water should be tested 3 - 4 times during the growing season.

iv. Keep records of all test results and dates of irrigation, foliar applications and harvest. See page 39 for a Water Testing Record form.

Form 11: WATER TESTING RECORD

DATE	*E. COLI*	TOTAL COLIFORM	LABORATORY
Sept 7/02	Negative	Negative	Public Health Unit Laboratory

Notes:

PERSONNEL (6.4)

Key Points

i. Develop a sanitation training program for all employees.

ii. Educate employees on good hygiene and proper hand washing procedures – see pages 26–27.

iii. Be aware of the signs of infectious disease and exclude ill employees from the operation.

iv. Provide adequate washroom facilities in the field and in the processing areas.

The horticulture industry tends to be highly seasonal in Ontario, resulting in a high turnover rate of staff. For this reason, it is very important to have a well-established program for training all new staff in the proper sanitary procedures for producing apple cider as well as good personal hygiene.

i. All employees responsible for sanitation of the equipment or facility should be properly trained and educated as to the:
   - importance of sanitation
   - sanitation procedures specific to your operation, and
   - proper use of sanitizing chemicals.

ii. Employees must also understand the importance of good personal hygiene in preventing contamination of the food. Some hygiene factors are listed on page 26. This includes proper hand washing procedures as described on page 27.

iii. Employers and employees should be aware of the signs of infectious disease, such as diarrhea, vomiting, persistent cough, skin rashes, and infections of the nose, eyes, ears or mouth. A worker with any of these

symptoms should not be allowed contact with food, equipment or packaging material.

iv. Sufficient washroom facilities should be available to staff – approximately 1 bathroom for every 10 employees. Washrooms should be stocked with soap, warm water, single-use towels and a sign reminding them to wash their hands before returning to work.

Fruit Inspection (6.5)

Key Points

i. **Inspect all fruit for quality: cull out damaged, rotten, or wormy apples.**

ii. **Custom pressers should enter into a Grower's Agreement – see Form 12 on page 43 – and monitor incoming produce – see Form 13 on page 44.**

i. Upon arrival at the processing facility, apples should be inspected for quality. Apples harvested from your own orchard should pose fewer problems since you have greater control of the personnel and the quality of apples picked. Greater risk occurs in the custom pressing of apples from other growers. It is near to impossible to patrol other growers' orchards to ensure their fruit is top quality and contamination-free.

   As described in the Fruit Sorting section on page 16, all dirty, decayed and wormy apples should be removed from the cider production line and properly discarded. The general quality of the apples you are custom pressing should be recorded in Form 13 on page 44.

ii. Those involved in custom pressing should enter into a written agreement with each grower, specifying stringent adherence to high standards for apple quality and safety. This could include standards for orchard management, such as proper use of fertilizers and pesticides, water quality, and best harvesting practices (as outlined in the CFIA code of practice) – including a worker education program. See a sample Grower's Agreement on page 43. One of these should be filled out for each grower/supplier at the beginning of each pressing season. Also see page 44 for a Raw Produce Receiving Report form to record each grower's name, date, batch number, and other vital information on the produce received.

Form 12: SAMPLE GROWER AGREEMENT

PURPOSE:
The purpose of this agreement is to ensure that the apples being provided to/purchased by _____*Fraser View Farms*_____ (cider presser) meet the requirements of the Canadian Food Inspection Agency's (CFIA) Code of Practice for the Production and Distribution of Unpasteurized Apple and Other Fruit Juice/Cider in Canada.

AGREEMENT:

I, _____*Brian Smith*_____ (apple grower or other supplier) agree to supply apples to the cider presser named above, which have met ALL of the following recommended practices as stated in the Code of Practice:

A) Harvest - "NO GROUNDERS" - No fruit that touched the ground or floors was included in the apples supplied for "Fresh Unpasteurized" apple juice/cider. The harvesting process was supervised and monitored to insure that only wholesome, clean, tree-picked (no grounders) apples were placed in suitable clean bins and/or field containers.
B) Harvest Training - Field workers harvesting apples were provided with training to ensure that only wholesome, clean, tree-picked (no grounders) apples were harvested.
C) Field Sanitation - Field workers harvesting apples were provided with adequate toilet and hand washing facilities, and instructed in the proper procedures regarding personal hygiene.
D) Livestock Grazing/Livestock Fertilizers - During the past twelve months no livestock grazing occurred in the orchards and no livestock fertilizers, including biosolids (human waste), were used in the orchards.
E) Water used to irrigate and dilute pesticides etc. is of an acceptable microbial quality as per the Code of Practice (This can be verified by testing).
F) Records of fertilizer and pesticide, etc., applications, including water sources are maintained.

I hereby certify that the above is true and correct and that all of the apples supplied to _____*Fraser View Farms*_____ (Cider Presser) meet ALL of the requirements as stated above for the___*2002-2003*__ pressing season.

Grower/Supplier name: _____**Brian Smith**_____

Grower /Supplier signature: _____*Brian Smith*_____ Date:_*Sept 1st/02*___

Form 13: RAW PRODUCE RECEIVING REPORT

Date: Sept 6/02	**Lot# 01**
Shipper: A. Barras	**No.of units:** 3 Bins
Product: Red Delicious	**Cooler temp when received:** 3°C
Grower: Brian's Apple Farm	

Product Inspection

Rate on a scale of 1-10 (1 = very poor, 10 = very good)

CATEGORY	RATING	COMMENTS
Decay / Bruised	9	Minimal bruising
Skin punctures / Cracks	8	Some apples with puncture wounds
Discolouration	10	
Wormy / Insects	10	
Visible dirt	10	
Other		

General comments on lot received

Lot in good condition

Accepted: ✔ **Rejected:** _____

Inspected by: A. Hill

FRUIT PROCESSING (6.6)

Key Points

I. **Keep processing area in good condition.**

II. **Clean and sanitize all equipment and press cloths after each new batch, especially if you custom press.**

III. **Keep records of all microbial testing and a list of any added ingredients using Preservative and Microbial Testing Logs – see pages 46–47.**

The condition of a processing area can have a big impact on the quality and safety of cider. A few simple precautions can be taken to reduce the risk of contaminating the product.

i. The processing area should be enclosed, clean, well-lit, dry, well-ventilated, and screened to keep out pests. If possible, this area should be separate from the area where the fruit is sorted and washed to reduce the risk of cross-contamination.

ii. When other growers' apples are being custom pressed, it is advisable to clean and sanitize pressing equipment and pressing cloths between each batch. This will prevent someone else's apples from contaminating the equipment and possibly your apples and cider.

iii. Whenever cider is tested for microbial quality, keep records of the test results and also of any ingredients, such as preservatives, you may add to your apple cider. See Forms 14 and 15 on pages 46–47 for Preservative and Microbial Testing Logs. These logs also record the Lot Code Identification Number referred to under Labelling (page 49) and Recalls (page 53).

Form 14: PRESERVATIVE LOG

Preservative used: *sodium benzoate* **Recommended concentration** *0.1%*

DATE	TIME	LOT CODE #	TOTAL LITRES OF CIDER	CONCENTRATION OF PRESERVATIVE	VERIFIED BY
Sept 8/02	*8:30 am*	*14201*	*500*	*0.09%*	*AH*

Form 15: MICROBIAL TESTING LOG

DATE	TIME	LOT CODE #	TOTAL LITRES OF CIDER	TESTED FOR: Total Coliforms	TESTED BY
Sept 6/02	*3pm*	*06.2018*	*500*	*Negative*	*Perkins Health Lab*

Packaging (5.7)

Key Points

i. **Use only new, non-porous, non-corrosive, food-grade containers.**

ii. **Clean, sanitize and rinse bulk containers prior to reusing.**

iii. **Refrigerate all unpasteurized apple cider.**

If you have worked the past with contamination free cider, the last thing you want to do is use unsanitary packaging for your product. Packaging can transfer microbial and chemical contamination to the cider.

i. Cider should be packaged into clean food-grade containers. For information on approved packaging materials, see page 68. If filling containers by hand, be sure not to touch the mouth of the bottle or the cap, as hands can be a source of microbial contamination.

ii. New containers and caps are preferable, but if glass bottles are used, they can be reused if properly sanitized first. Before being used, containers and caps should be stored so as to prevent contamination.

iii. All unpasteurized apple cider should immediately be refrigerated at 1-4°C (34-39°F) or frozen at less than -18°C (0°F). The cider should be held at that temperature until consumed or transported to market.

Safety concerns regarding filling from bulk containers at farmers' markets or roadside stands is covered in the chapter on Cider Storing and Retailing, starting on page 61.

Learning (5.4)

Key Points

1. **All unpasteurized cider MUST be labelled.**
2. **Must at exceed FDA and CFIA labelling requirements – see Example Label on page 99.**

1. All cider being sold to the public must be clearly labelled, either by hand or with printed labels. Cider sold without a label is in violation of the Food and Drugs Act (FDA) as well as the Consumer Packaging and Labelling Act (CPLA).

2. All juice/cider labels must meet or exceed the requirements of the Food and Drugs Act and Regulations and the Consumer Packaging and Labelling Act and Regulations.

A label MUST include the following:	A label SHOULD include the following:
Common name (i.e. Sweet Apple Cider)	Storage requirements ("Keep Refrigerated" or "Keep Frozen")
Net quantity	Lot code identification number*
Name, address and telephone number of producer	The word "Unpasteurized" if the product is unpasteurized
List of ingredients (a preservative is considered an ingredient)	
Durable Life Date" or "Best Before" date (preferably on the cap)	

* The "lot code identification number" provides a traceback mechanism in the event of a product recall.

As a precaution, consider attaching an additional label around the neck of the bottle that reminds customers to ACCEPT RESPONSIBILITY.
For a sample label, see the next page.

Example Label

Fresh Apple Cider

[redacted]

Fraser View Farms
[redacted]
(613) 443-1738

2 l

Best Before:
11 Nov 02

Ingredients: Apples, [redacted]

RECORDS (7)

Key Points

i. **Establish a coding and trace-back system.**

ii. **Keep all records up-to-date and readily retrievable.**

Keeping good records throughout production has many benefits. It helps keep better track of what goes on in a facility. Documentation highlights the producer's commitment to reducing food safety risks associated with a product. And in the case of a safety or quality problem, good documentation will allow you to trace the problem back to the source much more efficiently.

i. Try to establish a coding system that can quickly and easily identify the product. This coding system should be used throughout all documents kept by the operations, to easily identify the path the product in question has taken. Some producers use their best before date as a lot code number, which is a sufficient system for those who do not press apples other than their own. Custom pressers, however, need a slightly more sophisticated system. Here is an example of a system used to code a product.

   Every day of the year is assigned a random 3-digit number. Only people with your calendar will be able to read the code. For example:

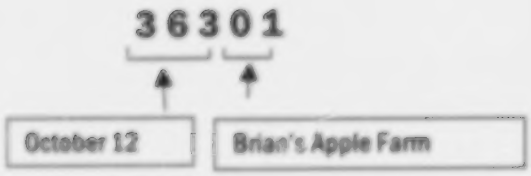
OCTOBER

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1 435	2 196	3 223	4 427	5 729
6 330	7 885	8 890	9 274	10 119	11 352	12 363

   Establish a two-digit code to identify the orchard from which the apples come. For example:

   01 - Own Apples 02 - Brian's Apple Farm 04 - Murray's Orchards

   Therefore, a batch of apples from Brian's Apple Farm, pressed on October 12, would have a lot code number of:



Each jug of cider should bear a lot code number. The above system is simply a suggestion – any coding system that identifies when the cider was pressed and where the apples came from is sufficient.

ii. Keep all records up to date, using proper lot code identification, signed by the person in charge and readily accessible. The various record-keeping forms referred to in the preceding sections of this Workbook will assist you greatly in monitoring the apple cider production process, from orchard management to retail.

RECALLS (8)

Key Points

i. **Immediately notify health authorities if you suspect that you have sold or distributed product that may pose a health risk to consumers.**

ii. **Maintain an effective control and trace-back system that records activities at critical stages of the production process and record these in a Cider Production and Distribution Log – see Form 16 (page 55) and Forms 17 and 18 (pages 56–57).**

A recall can be initiated in one of two ways:
Self Identified – you may have reason to believe that the safety of the product you produced is in question. You may realize after the product is finished that the conditions under which it was processed were unsafe, or a customer complaint might be brought to your attention. In either case, if you question the safety of your final product you need to contact the Canadian Food Inspection Agency (CFIA).
Externally identified – The safety of your product might be questioned by your municipal, provincial or federal regulatory agencies. This may be due to positive sample results from monitoring programs or a foodborne illness might be traced back to your product.

i. The Canadian Food Inspection Agency (CFIA) must be notified immediately by you if your operation has sold, distributed or imported a product that may pose a serious risk to consumers.

   The Current Ontario Recall emergency number at the CFIA is:

   416-973-8724

   this number is in operation from 8 am -11 pm, 7 days a week.

ii. The CFIA will need the following information from you:
- a detailed description of the nature of the problem
- the name, brand, size, and lot code(s) affected
- details of complaints received and any reported illnesses
- the distribution of the product – local or national
- when the product was distributed (specific dates)
- label(s) of the product(s) in question
- the total quantity of product imported and distributed
- the name of your firm's contact with the CFIA
- the name and telephone number(s) for your firm's after-hours contact.

To be able to provide the CFIA with the appropriate information, production records must be maintained so that, in cases of a recall, you know exactly which lots of cider are in the marketplace, how many bottles were produced, and where the product went after leaving your operation. See Forms 16–18 in this section.

Proper labelling, discussed on page 49, is key to an effective recall system – particularly the use of a lot code identification number. The ability to isolate a single lot as the source of the problem might prevent you from having to recall all of your product. This will minimize the economic impact of the recall on your operation.

Form 16: CIDER PRODUCTION AND DISTRIBUTION LOG – CUSTOM PRESSER

Production date: Sept 8/02

Lot code number: 16201

Supervisor A. Hill

Storage tank: (A) B C

Total litres made: 500L Total bins used: 3

VARIETY	# BOXES USED	GROWER	DISTRIBUTED TO NAME	# OF LITRES
Macs & Red Del.	1	Brian's Apple Farm	A. Barras	170L
Macs & Red Del.	1	Brian's Apple Farm	L. Day	160L
Macs & Red Del.	1	Brian's Apple Farm	I. Hales	170L

Notes:

FORM 17:CIDER PRODUCTION AND DISTRIBUTION LOG
SELF-PRODUCED – BOTTLED

PROD. DATE	CODE LOT NO.	4 L JUG	2 L JUG	APPLE VARIETY	SOLD TO
Sept 8/02	16201	40		Macs & Red Del.	P. Macleod
Sept 8/02	16201		25	" "	F. Jones
Sept 8/02	16201		3	" "	K. Martin
Sept 8/02	16201	10	10	" "	M. Moore

Notes:

FORM 18:CIDER PRODUCTION AND DISTRIBUTION LOG
SELF-PRODUCED – BULK

PROD. DATE	CODE LOT NO.	TOTAL NO. OF LITRES	APPLE VARIETY	SOLD TO
Sept 8/02	16201	100L	Mac's & Red Del.	M. Baker
Sept 8/02	16201	50L	Mac's & Red Del.	C. Lewis

Notes:

NOTES:

TRANSPORTATION OF BULK OR BOTTLED CIDER (9)

Key Points

i. **Clean and sanitize vehicles before transporting bulk or bottled cider.**

ii. **Keep cider refrigerated.**

i. Trucks should be cleaned and sanitized before transporting bulk or bottled cider to market (for information on approved cleaners and sanitizers, see page 68). Avoid using vehicles that have been used to haul manure, compost or animals. Use new or clean containers for transporting cider.

ii. Transporting product from refrigerated storage in bulk containers reduces the rate of growth of bacterial contaminants. Cider should be maintained at a temperature of 0 - 2°C (32 - 36°F) while in transport.

NOTES:

CIDER STORING AND RETAILING (10)

Key Points

i. **Refrigerate cider immediately after pressing in tanks or bottles.**

ii. **Keep your retail facility free of debris and damaged or decaying fruit.**

iii. **Train your retail staff to use proper hygiene and provide proper hand washing facilities.**

iv. **Advise customers of "best before date" and to keep cider refrigerated.**

v. **Do not refill used bottles.**

i. Cider can be stored in refrigerated tanks before bottling or it can be put into containers directly after pressing. It is important that cider be cooled as quickly as possible to between 0 - 2°C (32 - 36°F). Fresh apple cider will last about two weeks if stored at 0°C, 4°C (32°F, 40°F), or lower. Adding sodium benzoate or other preservatives will extend the shelf life about one to two weeks. Freezing the product will also increase the shelf life.

ii. Off-farm bottling can pose additional risks to the cider. On the farm, you have much greater control over the cleanliness and sanitation of your bottling operation. At market, whether inside or outside, you have less control over the cleanliness of your immediate environment. Keep stalls free of debris and damaged or decaying fruit, so as to lessen the intrusion of pests, rodents, and other animals.

iii. Train all sales staff to use proper hygiene procedures. If the farmer's market or roadside stand does not have hand washing facilities, bring your own. Provide a five-gallon container filled with potable water and equipped with a spigot, together with soap and single-use paper towels, or hand sanitizer.

iv. Sales staff should advise consumers of the "best before date," and offer safety tips on proper storage and refrigeration of unpasteurized apple cider. Develop a first in/first out (FIFO) system. That is, sell the first produced cider first.

v. The bottling apparatus must be kept free and clear of foodborne contamination. Filling customers' bottles poses a significant risk of contamination. Regardless of how much care customers may have undertaken to clean and sanitize their bottles, no one can be 100 percent sure they are free from harmful microorganisms. Any foodborne illness caused by contaminated bottles, regardless of fault, will affect unfavorably on you and all other producers of unpasteurized apple cider.

   One unsanitary bottle coming into contact with a filling apparatus can also spread contamination to all future bottles filled that day. If possible, use only new bottles and caps and do not fill used bottles.

RATE YOURSELF

How would you rate yourself with regards to the safe use production tool management practices put forward in the Workbook?

Use the following page to determine rankings and identify areas that might need improvement.

As you make improvements, remember that food safety must be an ongoing process and priority. Never let down your guard! Vigilant cleanliness and sanitation procedures will go a long way to ensuring that you produce the safest and best quality unpasteurized apple cider.

Commitment begins with you!

	POOR							GOOD		EXCELLENT
Primary Production										
Orchard management	1	2	3	4	5	6	7	8	9	10
Harvesting practices	1	2	3	4	5	6	7	8	9	10
Intermediate Operations										
Transportation practices	1	2	3	4	5	6	7	8	9	10
Fruit storage practices	1	2	3	4	5	6	7	8	9	10
Fruit sorting	1	2	3	4	5	6	7	8	9	10
Fruit cleaning	1	2	3	4	5	6	7	8	9	10
Processing Facilities and Operations Premises and Equipment										
Pre-operation cleaning and set-up	1	2	3	4	5	6	7	8	9	10
Daily operations and routine cleaning	1	2	3	4	5	6	7	8	9	10
Post-operations clean-up	1	2	3	4	5	6	7	8	9	10
Pest control	1	2	3	4	5	6	7	8	9	10
Water supply	1	2	3	4	5	6	7	8	9	10
Personnel	1	2	3	4	5	6	7	8	9	10
Fruit inspection	1	2	3	4	5	6	7	8	9	10
Fruit processing	1	2	3	4	5	6	7	8	9	10
Packaging	1	2	3	4	5	6	7	8	9	10
Labelling	1	2	3	4	5	6	7	8	9	10
Records	1	2	3	4	5	6	7	8	9	10
Recall	1	2	3	4	5	6	7	8	9	10
Transportation of Bulk/Bottled Cider	1	2	3	4	5	6	7	8	9	10
Cider Storage and Retailing	1	2	3	4	5	6	7	8	9	10

RESOURCES

In Print

Code of Practice for the Production and Distribution of Unpasteurized Apple and Other Fruit Juice/Cider in Canada
Canadian Food Inspection Agency and Health Canada

Food Safety Begins on the Farm – A Grower's Guide
Guad Agricultural Practices for Fresh Fruits and Vegetables
Cornell Good Agricultural Practices Program

Fresh Apple Cider Mill
Michigan Department of Agriculture
Food and Dairy Division
Lansing, Michigan

Reducing Food Safety Risks in Apples
A Self-Assessment Workbook for Producers of Apples, Juice and Cider
Washington State University

Unpasteurized Juice/Cider Safety Project
Ontario Ministry of Agriculture and Food
Food Inspection Branch, August 2001

On the Internet

Ontario Ministry of Agriculture and Food Website:
http://www.gov.on.ca/OMAF/

Health Canada's Website:
http://www.hc-sc.gc.ca/

Canadian Food Inspection Agency's Website:
http://www.inspection.gc.ca/

Ministry of Health and Long Term Care's Website:
http://www.gov.on.ca/health/index.html

Public Health Units (all regional Health Unit phone numbers and addresses):
http://www.gov.on.ca/health/english/contact/phu/phuloc_dt.html#central%20east

CONTACT BY PHONE

Ontario Ministry of Agriculture and Food.
Agricultural Information Contact center: **1-877-424-1300**

For Public Health Unit information see above website or call:
1-800-268-1154 (Toll-free in Ontario only)

APPENDIX 1

PATHOGENS, RELATED ILLNESS AND ASSOCIATED FOODS

PATHOGEN	INCUBATION PERIOD	DURATION OF ILLNESS	SIGNS AND SYMPTOMS	ASSOCIATED FOODS
E. coli O157:H7 (Bacteria)	1–8 days	5–10 days	Severe diarrhea that is often bloody, abdominal pain and vomiting. Usually, little or no fever is present. More common in children under 4 years. Can lead to severe kidney problems or death.	Undercooked beef, unpasteurized milk and juice/cider, raw fruits and vegetables (e.g. sprouts), salami, salad dressing, and contaminated water.
Salmonella spp. (Bacteria)	1–3 days	4–7 days	Diarrhea, fever, abdominal cramps, vomiting. *S. typhi* and *S. paratyphi* produce typhoid with insidious onset characterized by fever, headache, constipation, malaise, chills, and myalgia; diarrhea is uncommon and vomiting usually not severe.	Contaminated eggs, poultry, unpasteurized milk or juice/cider, cheese, contaminated raw fruits and vegetables (alfalfa sprouts, melons). *S. typhi* epidemics are often related to fecal contamination of water supplies or street-vended foods.
Cryptosporidium parvum (Parasite)	7 days average (2–28 days)	Days to weeks	Cramping, abdominal pain, watery diarrhea; fever and vomiting may be present and may be relapsing.	Contaminated water supply, vegetables, fruits, unpasteurized milk.
Hepatitis A (Virus)	30 days average (15–50 days)	Variable, 2 weeks to 3 months	Diarrhea, dark urine; jaundice; and flu-like symptoms (i.e., fever, headache, nausea and abdominal pain).	Shellfish harvested from contaminated waters, raw produce, uncooked foods and cooked foods that are not re-heated after contact with infected food handler.

Source: Diagnosis and Management of Foodborne Illnesses: A Primer for Physicians. Foodborne Illnesses Table. Viral and Bacterial Agents. American Medical Association, Centers for Disease Control and Prevention, Center for Food Safety and Applied Nutrition (Food and Drug Administration), Food Safety and Inspection Service (US Department of Agriculture), January 2001.

APPENDIX 2

CFIA-APPROVED MATERIALS AND PRODUCTS

Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products

The following is a list of the types of products, applicable to apple cider production, that can be found on the Canadian Food Inspection Agency's list of approved products. To view the list in detail, please visit the CFIA website at:
http://www.inspection.gc.ca/english/ppc/reference/cone.shtml#v

If you do not have access to the internet or have any questions about these products, please contact the following:
Mr. Jack Donald, Program Officer, Food Safety Risk Analysis, Science Div.
Canadian Food Inspection Agency, Floor 3, Room C313
3851 Fallowfield Rd, Ottawa, Ontario, K2H 8P9
Tel: 613-228-6698 ext. 4965 *Fax:* 613-228-6675
E-mail: jdonald@inspection.gc.ca

The following categories of products can be found on the CFIA website:

Cleaners	▪ general cleaners ▪ hand cleaners/personal hygiene ▪ cleanders/defoamers for washing fruits and vegetables, to be followed by a potable water rinse
Coatings for construction	▪ coating for walls and ceilings ▪ coating for floors ▪ coating for structural members ▪ internal tank coatings for food or potable water contact ▪ sealants for minimal or incidental food contact ▪ reusable shipping containers for food contact
Microbial control agents for food-processing water	▪ for fruit and vegetable wash ▪ for fruit and vegetable flume water
Containers for food	▪ in-plant containers for food contact ▪ in-plant containers for non-food contact ▪ disposable shipping containers / single use for food contact ▪ reusable shipping containers for food contact
Sanitizers	▪ general ▪ hand dip
Pesticides	▪ insecticides ▪ rodenticides

APPENDIX 3

PROPER CARE OF YOUR WELL

This information is on the Regional Municipality of Halton Public Health Unit website: http://www.region.halton.on.ca/health/healthyenvir/Water/Safe_water.htm#Inspect%20and%20Maintain%20Your%20Well%20to%20Prevent%20Contamination

Well location

- Make sure the well is located at a safe distance from any source of contamination such as septic systems, barnyards and roads.
- A dug well should be at least 30 metres away from a septic system and a drilled well should be at least 15 metres away.
- The land around a well should slope away from the well to prevent surface water from flowing to the well casing.
- Do not store, use or dispose of garbage, manure, petroleum, salt, pesticides or any other potential contaminant near the well.
- Always dispose of household hazardous wastes via the Region's Household Hazardous Waste Program. Remember, waste poured into the ground can eventually get into your water supply or your neighbour's.

Well construction

- The sanitary well seal and the cap should be securely in place and watertight. If the cap is damaged or cracked, replace it right away.
- The sanitary well seal could be a minimum of 30 centimetres above ground level. The connection at the well casing for pump and electrical lines should be watertight and properly sealed.
- Well vent pipes should have screens to prevent anything from getting into the well

Protect your water supply

- Make sure the well lid and seal are secure, in good repair and watertight.
- Stop liquids, waste material, garbage, or manure piles from draining towards the well.
- Do not treat the area around the well with pesticides or fertilizer.
- Do not flush oils, detergents, paints, solvents or other chemicals down the toilet or sink.
- Chlorinate and flush your water supply systems after any repairs.

APPENDIX 4

WELL WATER TESTING AND TREATMENT

The following 3 pages are provided by the Waterloo Region Community Health Department. They provide instructions on how to get a proper sample of your water, how to interpret your results and how to properly treat your well. Other health units generally operate in a similar fashion to the Waterloo Unit, but it is advisable for you to call your local Health Unit to determine the proper procedure for your area (see page 66 for instructions on how to obtain your local Health Unit's information).

Waterloo Region Community Health Department
Environmental Health and Lifestyle Resources
(519) 883-2008 (Waterloo)
(519) 621-6110 (Cambridge)

HOW WELL IS YOUR WELL ?

Sampling /Testing ♦Why and How

Interpretation ♦ Disinfection

Why should you sample your well?

Drinking water containing harmful germs can make you sick. These germs can give you stomach cramps and/or diarrhea as well as other problems. The only way to make sure that your water supply is safe to drink is to test it regularly. Testing for bacteria is done FREE. It is also recommended that you have your well water tested for nitrates.

How to sample your well for bacteria

1. Obtain a water sample bottle from one of the offices listed in the table below.
2. Remove aerators and other attachments from your tap.
3. Let the water run for 2 - 3 minutes before sampling.

Do not touch the bottle lip and do not rinse out the bottle!

4. Fill the bottle to "fill line" directly from the tap without changing the flow of water.
5. Replace cap tightly. Complete the form which came with the bottle.
6. Return the bottle and attached form; see the table below.

Where you pick up a bottle:	When you can return it for testing:
Community Health Department Offices • 99 Regina St S., Waterloo • 150 Main Street, Cambridge	**Monday - Thursday** 8:30 - 4:30
Township Offices • Woolwich • Wilmot • Wellesley • North Dumfries	ON THE **LAST** TUESDAY OF EVERY MONTH
Woolwich Community Health Centre • St Jacobs	ON **EVERY** TUESDAY

How to interpret laboratory results

Do not attempt to apply these interpretations to surface water used for swimming.

Total Coliforms	E. coli	What It Means
0	0	SAFE for drinking. Maintain regular testing.
1 - 5	0	Three samples with these results, collected 1 to 3 weeks apart, indicate a bacteriologically SAFE supply if the supply is protected and located at least 15 m (50 ft) for a drilled well or 30 m (100 ft) for other types of wells from any source of human or animal waste. Repeat samples may not show exactly the same results because bacteria are not distributed uniformly in water. Contamination tends to enter intermittently.
6 to >80	0	UNSAFE for drinking unless boiled or treated. Contamination is not likely to be of sewage origin unless removed from the water source. Common with new wells before disinfection and shallow dug wells which are not properly sealed.
1 to >80	1 to >80	UNSAFE for drinking unless boiled or treated. The water is contaminated and should not be used for drinking under any circumstances. The contamination is likely due to wastes from human or animal origin.
Est		UNSAFE for drinking unless boiled or treated. Number has been estimated due to some interference with the test. Exact number is not really critical, especially if in excess of limits shown above, for judging safety.
O/G		UNSAFE for drinking unless boiled or treated. Test was overgrown with non-coliform bacteria, making the coliform results unclear. Collect another sample. If condition persists, consult with a Public Health Inspector. This condition frequently occurs with new wells, dug wells receiving soil drainage, or wells which have been idle for some time.

If your water is unsafe for drinking, refer to "How to Disinfect Your Well" and re-sample afterwards.

What Do My Tests Mean?

Total Coliforms:
This group of bacteria is always present in animal wastes and sewage, but are also found in soil and on vegetation. The presence of these bacteria may indicate surface water entering your well.

Escherichia coli (E. coli):
These bacteria are found only in the digestive systems of people and animals. Their presence in your well is usually the result of sewage contamination from a nearby source.

How To Disinfect Your Well

You can easily disinfect your well by adding the following amounts of ordinary chlorinated household bleach:

Dug Wells (three feet (1 m) in diameter): Add one quart (one litre) of household bleach for every five feet (1.5 m) of water depth.
Drilled wells (six inches (15 cm) in diameter): Add five ounces (142 ml) of household bleach for every 25 ft (7.5 m) of water depth.
Well points (two inches (5 cm) diameter): Add three ounces (85 ml) of household bleach for every 10 ft (3 m) of depth.

Do not drink the water until you receive satisfactory sample results.

1. Add regular chlorinated household bleach (**not** lemon-scented or other types of bleach) to the well. If you don't know how deep the water is in the well, use the well depth to estimate how much bleach to add.
2. Disconnect any filters, run water through all taps for 20 minutes or until you smell chlorine and then let sit for 12 hours.
3. Run the rest of the treated water through the outside hose away from the septic tank system.
4. Stop running the water when the smell of chlorine is gone.
5. Use the water supply as you would normally (except for drinking), then re-sample in 48 hours.

Emergency Treatment

Remember you are disinfecting your well because the water is unsafe. You can make it safe by:

1. Boiling it for five minutes.

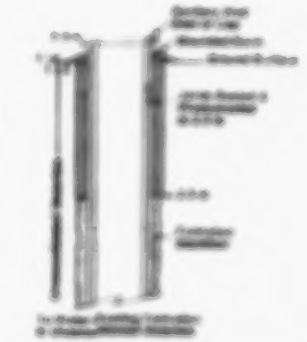
2. Adding eight drops (1.25 ml or 1/4 teaspoon) of chlorinated household bleach (not lemon-scented or fabric-safe) per gallon (4.5 l) of water. Mix it well and allow to stand for 15 minutes. (This treatment will not kill parasites).

Refrigerate boiled or treated water until used.

Abandoned wells should be carefully sealed to prevent pollution of ground water and any safety hazards. The hiring of a well contractor qualified to seal wells is strongly recommended.

Two most common types of wells:

DUG WELL



DRILLED WELL

ACKNOWLEDGMENTS

Environment Canada
Ministry of Environment and Energy
Ministry of Agriculture, Food and Rural Affairs
Ministry of Health and Long Term Care
Laboratory Services
Canadian Institute of Public Health Inspectors

Marathon County Community Health Department, Environmental Health & Laboratory Resources
(715) 261-2300 (Marathon)
(715) 421-8418 (Lincoln)

HOW WELL IS YOUR WELL?

Water Problems ● Treatment Devices ● Safe Sources ● Care and Protection

Common Water Quality Problems

PROBLEM	POSSIBLE CAUSE	TREATMENT
Health Effects: diarrhea, stomach cramps	Bacteria, parasites, viruses	1. Chlorination/ Chlorine contact 2. Ultra-violet systems 3. Chlorination - injector pump
Methemoglobinemia (Blue baby syndrome)	Nitrate*	- Reverse osmosis unit
High blood pressure	Sodium	- Reverse osmosis unit
Scale build-up in kettles and water heaters Soap scum, bathtub ring	Hardness (hard water)	- Water softeners
Red or brown stain in toilet tanks and bowls Unpleasant taste or odor	Iron bacteria	- Chlorination/ Chlorine unit
Rusty black stains on fixtures, laundry	Iron and/or manganese	- Filtration - Greensand filters - Water softeners - Chlorination/ Chlorine unit
Rotten egg smell and taste	Hydrogen sulfide and/or sulphate reducing bacteria	- Chlorination/ Chlorine unit - Greensand filters - Carbon
Water has bad/no effect	Sulphates	- Reverse osmosis unit
Salty taste, corrosive	Chloride	- Reverse osmosis unit
Gassy smell, gas bubbles escaping from water	gases (methane)	- Aeration - Activated carbon filters
Cloudy water	Turbidity (clay)	- Filters - Water softeners

*Nitrates

Nitrates are the end result of a chemical reaction; they are not bacteria. The presence of nitrates in your well water can be usually the result of farming activities like fertilizing or seepage from septic tanks.

Infants less than six months old can become sick from drinking formula made with water high in nitrates. The nitrates in the formula reduce the amount of oxygen carried by the blood and could cause "blue baby syndrome" (Methemoglobinemia).

Water Conditioning Equipment Options

Chlorinators:
These are mechanical units that continuously add chlorine to the water supply unit. The unit allows the chlorine enough contact time to kill bacteria. Chlorinators need to be checked often to make sure the right amount of chlorine is being added to the water.

Ceramic or Glass Fiber Filters:
They handle smaller amounts of water and are useful when water from just one tap is to be treated for drinking and cooking. Such filters can remove bacteria and protozoa from mildly contaminated waters. However, they are not suitable for removing viruses or for treating highly contaminated water.

Ultra-Violet Light (UV Filters):
Water is passed through an ultra-violet light source to kill harmful bacteria. Water must be very clear for the treatment to work properly; water may need to be filtered before treatment. Drinking water should be refrigerated after treatment. The light must be replaced on a regular basis.

Distillers:
Water is boiled in one compartment, then condensed and collected in another compartment. Water should be filtered before treatment and refrigerated afterwards. Some organic and inorganic chemicals are also removed.

Ozonators:
These are mechanical units that add small amounts of ozone to the water to kill most bacteria. Drinking water should be refrigerated after treatment.

ENVELOPE CONTENTS

Blank Forms

Records of Fertilizer and Pesticide Applications

Refrigerated Storage Temperature Log

Fruit Sanitizer Log

Pre-Operations Cleaning and Set-up Checklist

Daily Operations / Routine Cleaning

Post-Operations Cleaning/Sanitizing :: Grinder Hopper/Auger

Post-Operations Cleaning/Sanitizing :: Rasp and Press

Post-Operations Cleaning/Sanitizing :: Mist Shutter

Post-Operations Cleaning/Sanitizing :: Filter

Pest and Rodent Control Log

Water Testing Record

Grower's Agreement

New Produce Receiving Report

Preservative Log

Microbial Testing Log

Cider Production and Distribution Log :: Custom Process

Cider Production and Distribution Log :: Self-Produced Bottled

Cider Production and Distribution Log :: Self-Produced Bulk

Other

Preparation of Tools and Equipment Sanitizing Solutions from Chlorine Based Sanitizers

Employee Rules of Hygiene

The Six Steps of Proper Handwashing

RECORDS OF FERTILIZER AND PESTICIDE APPLICATIONS

BLOCK/ VARIETY	DATE	PRODUCT USED	RATE/UNIT	WEATHER CONDITIONS

REFRIGERATED STORAGE TEMPERATURE LOG

DATE	TIME	ROOM A	ROOM B	ROOM C	BULK COOLER	RETAIL COOLER	CHECKED BY

FRUIT SANITIZER LOG

Type of sanitizer used: _____

Concentration: _____

DATE	TIME	AMOUNT ADDED	CONCENTRATION	APPLES TEMPERATURE	WATER TEMPERATURE	CHECKED BY

PRE-OPERATIONS CLEANING AND SETUP CHECKLIST

Today's date: _____

Last day of production: _____

Employees responsible: _____

_____

		YES	NO	INITIALS
1	Equipment and press cloths visually clean			
2	Equipment requires re-cleaning and/or sanitizing			
3	Re-cleaning and/or sanitizing performed			
4	Reassemble equipment			
5	Sanitizer applied: _____ppm			

Corrective actions:

Supervisor signature: _____

DAILY OPERATIONS / ROUTINE CLEANING

Today's date: _____

Employees responsible: _____

_____

		YES	NO	INITIALS
1	Apples visually inspected			
2	Processing room / bulk tank room picked up/swept			
3	Trash receptacles dumped, cleaned, sanitized			
4	Cider cloths off floors on holding racks			
5	Packaging materials off the floor			
6	Pomace removal after each press			

Corrective actions:

Supervisor signature: _____

POST-OPERATIONS CLEANING / SANITIZING – GRINDER APPARATUS

Today's date: _____

Employees responsible: _____

_____

		YES	NO	INITIALS
1	Surrounding area free from debris			
2	Rinse top, inside, outside of grinder apparatus			
3	Remove by hand any remaining debris			
4	Scrub with cleaner and food-grade brushes top, inside, outside of grinder apparatus			
5	Rinse inside / top / outside			
6	Visually inspect: a) free from organic matter b) water clear			
7	Sanitizer solution concentration (ppm)			
8	Spray sanitizer on equipment, allow to drip off			

Corrective actions:

Supervisor signature: _____

[illegible]

[illegible]: _____

[illegible]: _____

_____

		[illegible]	[illegible]	[illegible]
1	[illegible]			
2	[illegible]			
3	[illegible]			
4	[illegible]			
5	[illegible]			
6	[illegible]			
7	[illegible]			
8	[illegible]			
9	[illegible]			

[illegible]:

[illegible]: _____

POST-OPERATIONS CLEANING/SANITIZING – WET BRUSHER

Today's date: _____

Employees responsible: _____

_____

		YES	NO	INITIALS
1	Surrounding area free from debris			
2	Rinse top, inside, outside of wet brusher			
3	Remove by hand any remaining debris			
4	Scrub with cleaner and food-grade brushes top, inside, outside of wet brusher			
5	Rinse inside / top / outside			
6	Visually inspect: a) free from organic matter b) water clear			
7	Sanitizer solution concentration (ppm)			
8	Spray sanitizer on equipment, allow to drip off			

Corrective actions:

Supervisor signature: _____

POST-OPERATIONS CLEANING /SANITIZING – FILLER

Today's date: _____

Employees responsible: _____

_____

		YES	NO	INITIALS
1	Surrounding area free from debris			
2	Cover motors / electrical panels			
3	Rinse down equipment			
4	Dismantle filler			
5	Scrub inside / outside of filler with cleaner			
6	Rinse filler			
7	Visually inspect			
8	Sanitizer concentration (PPM)			
9	Sanitizer applied, allowed to drip off food contact surfaces			
10	Utensil sink sanitizer concentration (ppm)			
11	Parts washed, rinsed, sanitized, air dried			

Corrective actions:

Supervisor signature: _____

PEST AND RODENT CONTROL LOG

DATE	STATION		STATUS	ACTION (DETAILS)	CHECKED BY
	#	TYPE			

WATER TESTING RECORD

DATE	*E. COLI*	TOTAL COLIFORM	LABORATORY

Notes:

SAMPLE GROWER AGREEMENT

PURPOSE:
The purpose of this agreement is to ensure that the apples being provided to/purchased

By_____ (cider presser) meet the requirements of the Canadian Food Inspection Agency's (CFIA) Code of Practice for the Production and Distribution of Unpasteurized Apple and Other Fruit Juice/Cider in Canada.

AGREEMENT:

I, _____ (apple grower or other supplier) agree to supply apples to the cider presser named above, which have met ALL of the following recommended practices as stated in the Code of Practice:

A) Harvest – "NO GROUNDERS" – No fruit that touched the ground or floors was included in the apples supplied for "Fresh Unpasteurized" apple juice/cider. The harvesting process was supervised and monitored to insure that only wholesome, clean, tree-picked (no grounders) apples were placed in suitable clean bins and/or field containers.

B) Harvest Training – Field workers harvesting apples were provided with training to ensure that only wholesome, clean, tree-picked (no grounders) apples were harvested.

C) Field Sanitation – Field workers harvesting apples were provided with adequate toilet and hand washing facilities, and instructed in the proper procedures regarding personal hygiene.

D) Livestock Grazing/Livestock Fertilizers – During the past twelve months no livestock grazing occurred in the orchards and no livestock fertilizers, including biosolids (human waste), were used in the orchards.

E) Water used to irrigate and dilute pesticides etc. is of an acceptable microbial quality as per the Code of Practice (This can be verified by testing).

F) Records of fertilizer and pesticide, etc., applications, including water sources are maintained.

I hereby certify that the above is true and correct and that all of the apples supplied to

_____ (Cider Presser) meet ALL of the

requirements as stated above for the _____ pressing season.

Grower/Supplier name: _____

Grower /Supplier signature: _____ Date: _____

RAW PRODUCE RECEIVING REPORT

Date:	**Lot#**
Shipper:	**No.of units:**
Product:	**Cooler temp when received:**
Grower:	

Product Inspection

Rate on a scale of 1-10 (1 = very poor, 10 = very good)

CATEGORY	RATING	COMMENTS
Decay / Bruised		
Skin punctures / Cracks		
Discolouration		
Wormy / Insects		
Visible dirt		
Other		

General comments on lot received

_____

_____

_____

_____

Accepted: _____ **Rejected:** _____

Inspected by: _____

PRESERVATIVE LOG

Preservative used: _____ **Recommended concentration** _____

DATE	TIME	LOT CODE #	TOTAL LITRES OF CIDER	CONCENTRATION OF PRESERVATIVE	VERIFIED BY

MICROBIAL TESTING LOG

DATE	TIME	LOT CODE #	TOTAL LITRES OF CIDER	TESTED FOR:	TESTED BY

CIDER PRODUCTION AND DISTRIBUTION LOG – CUSTOM PRESSER

Production date: _____

Lot code number: _____

Supervisor: _____

Storage tank: A B C

Total litres made: _____ Total litres used: _____

VARIETY	# BOXES USED	GROWER	DISTRIBUTED TO NAME # OF LITRES

Notes:

CIDER PRODUCTION AND DISTRIBUTION LOG
SELF-PRODUCED – BOTTLED

PROD. DATE	CIDER LOT NO.	G.L.AVB	G.L.AVB	APPLE VARIETY	SOLD TO

Notes:

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Preparation Of Apple- And Equipment Sanitizing Solutions from Chlorine Based Sanitizers.

What concentration of chlorine do you want in your water?

50 ppm – Apple Wash
100 ppm – Apple Wash or Equipment Wash
200 ppm – Equipment Wash

_____ **(A)**

How many litres of water is the sanitize being added to (i.e. how many liters of dilute sanitizer do you want to prepare)? (e.g., 500 litres)

_____ **(B)**

On the label of the sanitizer bottle, what percentage of hypochlorite is listed (e.g., 6%, 12% etc.)?

_____ **(C)**

To calculate the amount of sanitizer to add to your water, use your answers to the above questions to fill in the following formula:

LITRES OF BLEACH TO ADD = (A) x (B) = _____ LITRES
(C) x 10 000

= (DESIRED PPM OF CHLORINE) X (TOTAL WATER VOLUME)
(% HYPOCHLORITE IN SANITIZER) X (10 000)

Example:

You want 50 ppm chlorine. You are adding it to 500 litres of water. Your sanitizer is 6% sodium hypochlorite.

= (50) x (500) = 25000
(6) x (10 000) 60000

= 0.42 litres → So you add 0.42 litres of sanitizer to your water.

Common Conversions

0.1 litres = ½ cup	0.5 litres = 2 cups	0.8 litres = 3 ¼ cups
0.2 litres = ¾ cup	0.6 litres = 2 ½ cups	0.9 litres = 3 ½ cups
0.3 litres = 1 ¼ cups	0.7 litres = 2 ¾ cups	1.0 litres = 4

EMPLOYEE RULES OF HYGIENE

The rules below should be followed by all employees working in the orchard and/or processing facility:

1. **Eating, drinking, and personal grooming are prohibited in apple cider processing areas. Use designated areas for lunch and other breaks.**

2. **A proper hair restraint (cap or hairnet, beardnet) must be worn when working with or handling cider apples, pomace, unbottled cider, and packaging materials.**

3. **Smoking and other uses of tobacco in processing areas are prohibited.**

4. **Clean clothing is to be worn at the start of each processing day. Clothing should be changed as often as necessary to maintain cleanliness. Soiled garments are unacceptable in the cider processing area. Sanitary work garments should be provided as necessary.**

5. **Rubber boots and other footwear worn in the processing area must be kept clean. DO NOT wear field clothes, especially shoes or boots, into the apple cider processing area.**

6. **No jewellery or wrist watches may be worn in the pressing area.**

7. **Employees with diarrhea, boils, open sores, cuts, burns or skin infections shall not be allowed to process cider, handle raw fruit or handle packing materials.**

THE SIX STEPS OF PROPER HAND WASHING

1. Wet

Wet hands first

2. Soap

Use soap, preferably anti-bacterial.

3. Soap/Lather

Lather well beyond wrist.

4. Wash

Work all surfaces thoroughly including wrists, palms, back of hands, fingers, and under fingernails - Rub hands together for at least 15-20 seconds.

5. Rinse

Thoroughly rinse with clean water. Be sure not to touch side of sink.

6. Dry

Dry hands completely with a single use towel. Use towel to turn off water and protect hands from resoiling.